

REMARKS

Claims 1-20 are in this application and are represented for reconsideration. With this response, Applicant requests reconsideration of the Final Rejections of the claims.

It is Applicant's attorney's understanding that the invention was commonly owned at the time of the invention.

REJECTION UNDER 35 U.S.C. § 103 (a)

Claims 1-9, 12-15 and 17-20 continue to be rejected as being obvious based on the teachings of Leicht et al. (U.S. 5,551,627) and further in view of Gotman (U.S. 4,404,453). The rejection is based on the position that Leicht et al. discloses a process of producing contact structure for connecting two substrates. The reference discloses using adhesive compound applied to the solder to provide the connection. The rejection turns to Gotman for discloses heating of the solder. However, it is Applicant's position that the prior art as a whole including Gotman fail to suggest the combination of features claimed.

The invention includes applying solder material to terminal areas of a first substrate to form spacing metallizations. As such, these must provide a dimensional spacing according to the claim. The subject matter further requires that the bonding of the first substrate with the second substrate take place such that there is bonding between terminal areas of the first substrate and the contact surface area of the second substrate. This includes a partial fusion (a heating so as to maintain some of the metal not fused) during the bonding action so as to leave an essential part of the spacing metallization in a solidified state for spacing. This

requires the dimensional spacing metallization in an initial step and a following step wherein only a portion of the spacing metallization is fused for bonding and the bonding action leaves part of the spacing metallization in a solidified state with a continued dimensional for providing the spacing. Claims 12 and 17 are somewhat more specific.

All of the independent claims specifically and distinctly point out that there is no complete fusion or melting of the solder material being arranged between the terminal area and the first substrate and the contact surface area of the second substrate during the bonding action. The prior art such as Gotman must disclose this feature to at least provide some teaching of this feature. With the invention there is an essential part of the spacing metallizations formed by the solder material that is still in its solidified state. This provides a real dimensional spacing between the substrate parts. Claim 1, 12 and 17 include language or similar language as

*"Leaving that essential part of the spacing metallizations that
fulfills the spacing function in its solidified state"*

See for example page 7, lines 4 and 5 that point out that before partially fusing the spacing metallization the entire spacing metallization is in its solidified state. Specifically the requirement that some part is left in its solidified state requires that there is no complete melting of the spacing metallizations. Based on the fact that the process includes a solidified state of the solder material, the solder material is partially fused in order to perform the bonding action between the two substrates.

Gotman teaches a different series of steps. Instead, the bonding action described by

Gotman at column at column 4, lines 13-31, consists of a partial liquefying of the solder globular 72 of the substrate 70 which is to bond to the chip 60. That liquefying is performed by the application of heat onto the solder globular 72 when the substrate 70 "is not in immediate contact with the chip". Subsequently the solder globular 72 of the substrate 70 come into engagement with the solder globular 62 of the chip 60 resulting in a modification of the shape of the partially liquefied solder globular 72. "Then the solder globular on the chip become melted and the fusion takes place" (this is specifically mentioned at column 4, lines 30 and 31). As the heat from melting the solder globular 62 on chip 60 is transferred to the solder globular 62 via the solder globular 72 the reference does not provide even a hint or a suggestion to merely partially melt the solder globular 62. Instead the person of ordinary skill in the art is directed and effectively understands that the Gotman reference teaches a melting refusion of the entire solder globulars without leaving any part of the solder globulars in its solidified state.

As this point is very important to Applicant and as the references do not teach Applicant's particular process, Applicant requests that the Examiner allow Applicant the opportunity to discuss this with the Examiner during a telephone interview. Applicant suggests that this interview could occur any time, preferably at an early time such that these issues can be considered.

Applicant notes that beyond the fact that Gotman provides no teaching and no suggestion to merely partially melt the solder globular 62, it is also noted that Gotman does not provide a spacing function for the globulars as claimed. There is no mention of this.


Instead, the protruding arrangement of terminal 61 and chip 60 (see column 3, line 43) is explicitly mentioned and the protruding arrangement of the pad 71 of substrate 70 is illustrated very distinctly in Figure 2. This clearly leads the person of ordinary skill in the art to the realization that no spacing function is provided. There is a spacing function provided by the pad 71 and terminal 61 respectively. As such, there is no need for the person of ordinary skill in the art to provide any additional spacing function by use of the globulars. Instead, the function of globulars 62 and 70 can be reduced to a mere bonding function and not to a spacing function.

Claims 10, 11 and 16 have been rejected as obvious based on the references noted above and further in view of Beddingfield et al. (U.S. 5,710,071). It is Applicant's position that the claims as noted above are patentable and as such the dependent claims should also be considered patentable.

Applicant's claims present a significant and very important and substantial difference between Applicant's invention and the prior art as a whole. As there is no teaching or suggestion to provide the combination of features claimed, the Examiner is respectfully requested to reconsider the outstanding rejections.

Respectfully submitted
For Applicant,

By:


John James McGlew
Reg. No. 31.903

By: 

D.W. Darren Kang

Reg. No. 51,859

JJM/DWK:jms
70408RCE.10

DATED: November 1, 2004
SCARBOROUGH STATION
SCARBOROUGH, NEW YORK 10510-0827
(914) 941-5600

SHOULD ANY OTHER FEE BE REQUIRED, THE PATENT AND TRADEMARK OFFICE
IS HEREBY REQUESTED TO CHARGE SUCH FEE TO OUR DEPOSIT ACCOUNT 13-
0410.